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THE INSTITUTE OF PAPER SCIENCE AND TECHNOLOGY

Atlanta, Georgia

CONTINUOUS BASE-LINE STUDY (MODIFIED)
(MILL CORRUGATING MEDIUM DATA FOR JUL-AUG, SEP-OCT, NOV-DEC, 1989)

Project 2694-2

Report Seventy

A Progress Report

to

THE CONTAINERBOARD AND KRAFT PAPER GROUP

OF THE

AMERICAN PAPER INSTITUTE

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March 1, 1990

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March 1, 1990

Project 2694-2

Mr. Carroll T. Tolar
Senior Vice President - Engineering
Georgia Pacific Corporation
133 Peachtree Street
P.O. Box 105605
Atlanta, GA 30348-5605

Dear Sir:

We are enclosing a copy of the following report to the
Containerboard & Kraft Paper Group of The American Paper Institute.

Report Seventy, Project 2694-2 a progress report
entitled, Continuous Baseline Study (modified); Mill
Corrugating Medium Data for July-August, September-
October, November-December, 1989" dated March 1, 1990.

The code identities for paper machines in your company from which
data were submitted for evaluation are:

<u>Mill</u>	<u>Machine #</u>	<u>Code Letter</u>
Toledo	2	C2

Sincerely,

Roger H. Van Eperen
Group Leader
Paper Analysis Group
Research Services Division

RHV/fjm
Enclosure

Institute of Paper Science and Technology, Inc.

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THE INSTITUTE OF PAPER SCIENCE AND TECHNOLOGY
Atlanta, Georgia

CONTINUOUS BASE-LINE STUDY (MODIFIED)
(MILL CORRUGATING MEDIUM DATA FOR JUL-AUG, SEP-OCT, NOV-DEC, 1989)

SUMMARY OF CORRUGATING MEDIUM DATA
(JUL-DEC, 1989)

		Moisture Content, %					
Medium Grade Wt.		JUL-AUG		SEP-OCT		NOV-DEC	
		Total	Recycled	Total	Recycled	Total	Recycled
26 Lb.	Max.	9.4	7.6	9.4	7.7	9.4	8.0
	Min.	5.6	5.6	5.4	5.4	5.6	5.6
	Ave.	7.1(29)	6.4(9)	7.1(30)	6.5(10)	7.2(30)	6.6(10)
33 Lb.	Max.	9.8	7.8	9.7	8.0	9.7	8.1
	Min.	5.8	5.9	5.6	5.8	5.8	5.8
	Ave.	7.4(18)	6.9(5)	7.4(20)	7.1(6)	7.6(19)	7.3(6)

		Adj. Basis Weight, lb/M sq ft					
26 Lb.	Max.	27.1	27.1	27.2	27.2	27.0	26.8
	Min.	25.4	26.0	25.4	26.0	20.8	26.0
	Ave.	26.3(32)	26.5(11)	26.3(33)	26.6(12)	25.9(33)	26.4(12)
33 Lb.	Max.	33.9	33.9	33.9	33.8	33.8	33.8
	Min.	32.1	32.9	32.3	32.7	33.9	32.8
	Ave.	33.1(20)	33.2(6)	33.1(20)	33.1(6)	32.2(20)	33.2(6)

		Caliper, Mil					
26 Lb.	Max.	11.5	10.8	11.5	11.5	11.0	11.0
	Min.	8.0	8.6	8.0	8.6	7.9	8.4
	Ave.	9.3(25)	9.5(10)	9.4(26)	9.5(11)	9.4(27)	9.5(11)
33 Lb.	Max.	14.0	11.5	13.6	11.8	13.5	11.6
	Min.	9.0	9.0	10.2	10.2	10.1	10.1
	Ave.	11.3(18)	10.6(6)	11.4(17)	10.9(5)	11.4(18)	10.8(5)

Max. and Min. values are current machine averages.
Ave. is current F.K.B.G. average, number of machines is indicated in parentheses.

SUMMARY (cont.)

Concora, Lb.

Medium Grade Wt.		JUL-AUG		SEP-OCT		NOV-DEC	
		Total	Recycled	Total	Recycled	Total	Recycled
26 Lb.	Max.	71.0	65.4	74.0	67.7	72.3	72.3
	Min.	35.0	35.0	35.0	35.0	35.1	35.1
	Ave.	59.6(32)	54.3(11)	59.6(33)	55.3(12)	60.0(33)	56.1(12)
33 Lb.	Max.	83.0	76.6	87.8	87.8	90.2	90.2
	Min.	40.6	40.6	41.1	41.1	41.7	41.7
	Ave.	70.0(18)	57.0(5)	70.6(19)	62.5(6)	71.1(19)	63.0(6)

C.D. Ring Crush, Lb.

26 Lb.	Max.	42.5	32.5	45.4	31.0	41.0	32.0
	Min.	22.1	22.1	22.0	22.0	22.5	22.5
	Ave.	32.2(19)	26.9(6)	31.8(19)	26.4(6)	31.7(18)	26.9(6)
33 Lb.	Max.	61.0	53.5	63.0	50.0	60.5	53.0
	Min.	32.8	32.8	32.2	32.2	34.6	34.6
	Ave.	50.4(14)	45.4(5)	50.9(13)	42.3(4)	51.5(13)	44.7(4)

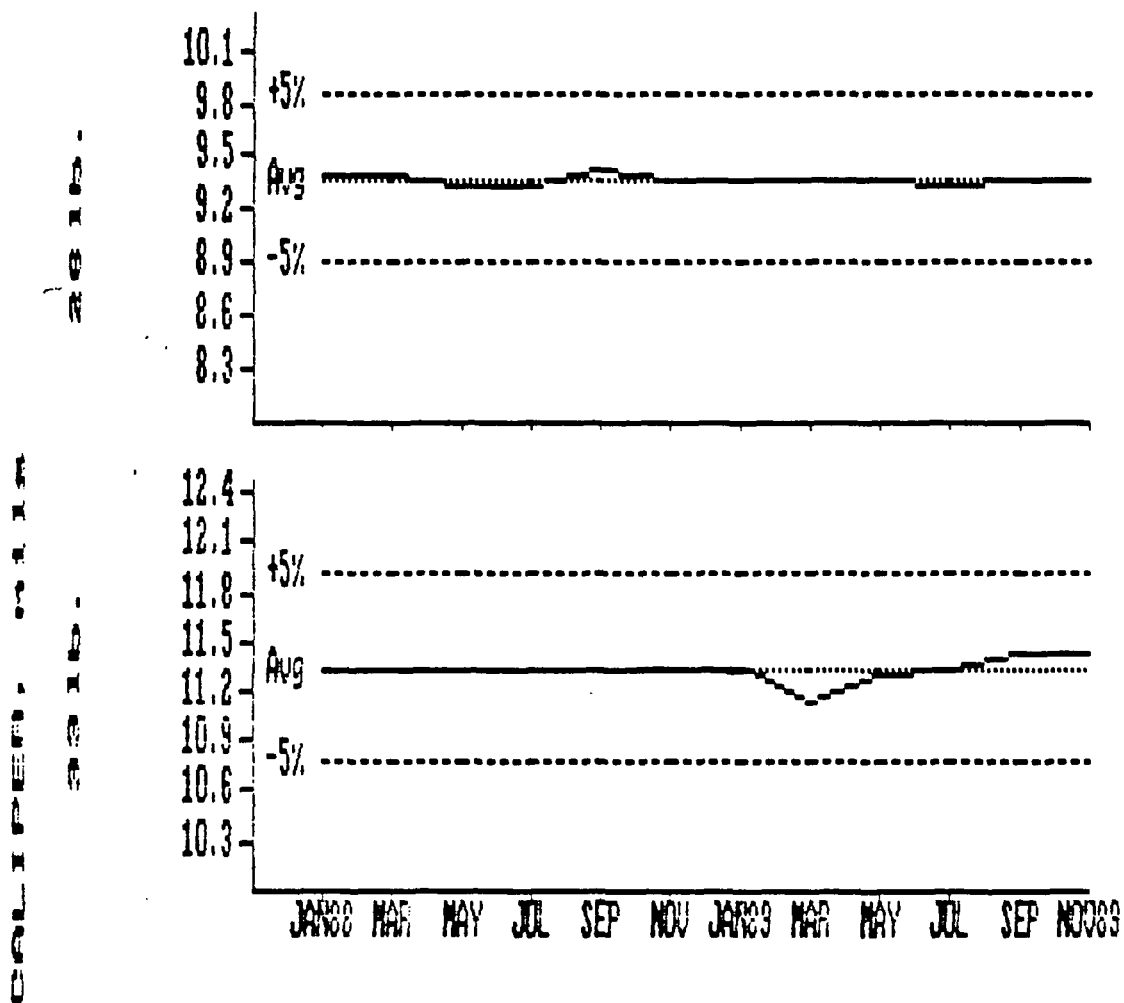
C.D. STFI, Lb/in

26 Lb.	Max.	15.2	11.9	16.6	16.6	14.6	11.2
	Min.	11.6	11.9	11.4	16.6	11.2	11.2
	Ave.	13.0(15)	11.9(1)	13.3(13)	16.6(1)	12.8(14)	11.2(1)
33 Lb.	Max.	18.7	16.3	19.1	15.8	19.1	16.0
	Min.	14.8	16.3	15.0	15.8	14.1	16.0
	Ave.	16.7(11)	16.3(1)	17.1(11)	15.8(1)	16.7(12)	16.0(1)

Max. and Min. values are current machine averages.

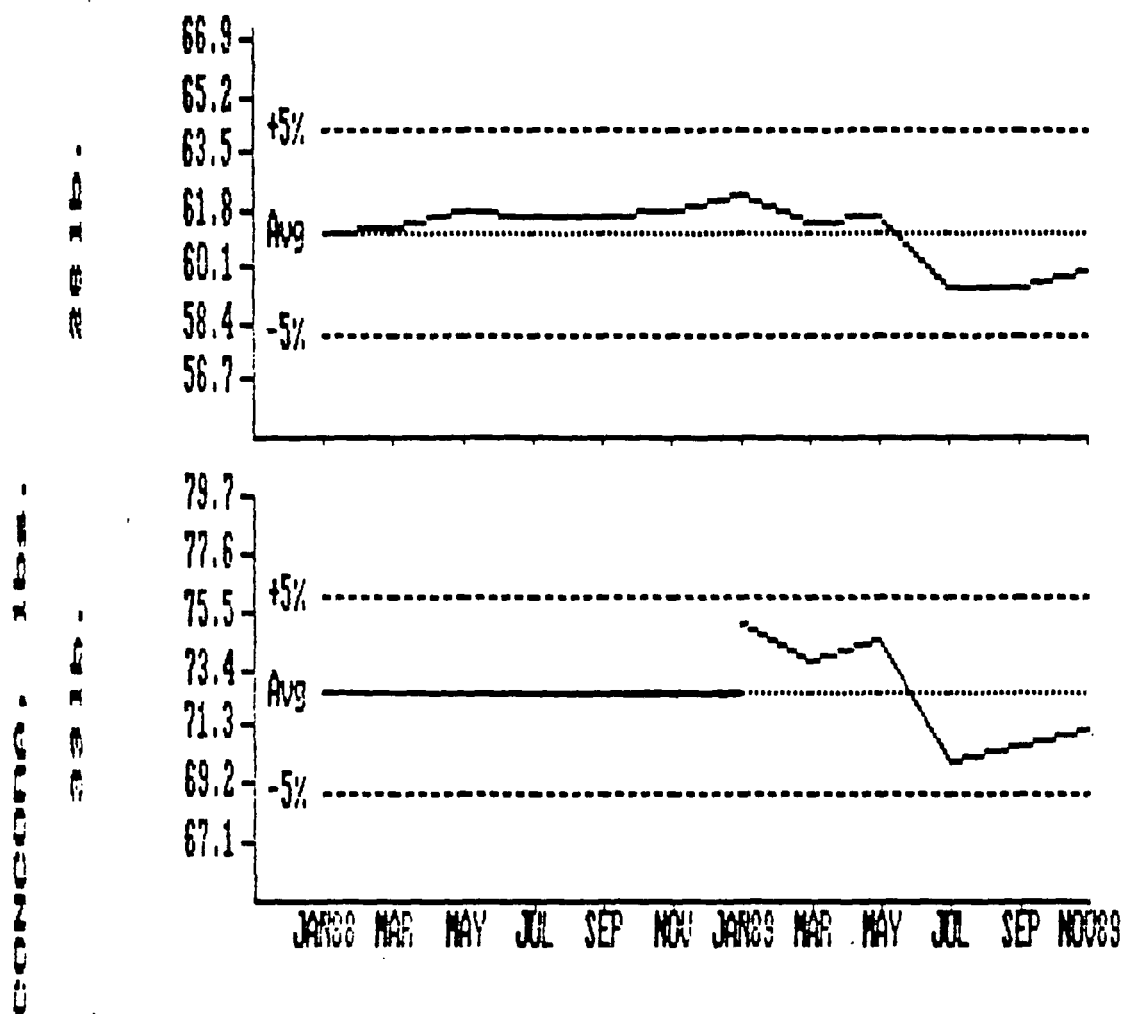
Ave. is current F.K.B.G. average, number of machines is indicated in parentheses.

TWO YEAR TREND PLOT FOR CALIPER, mils



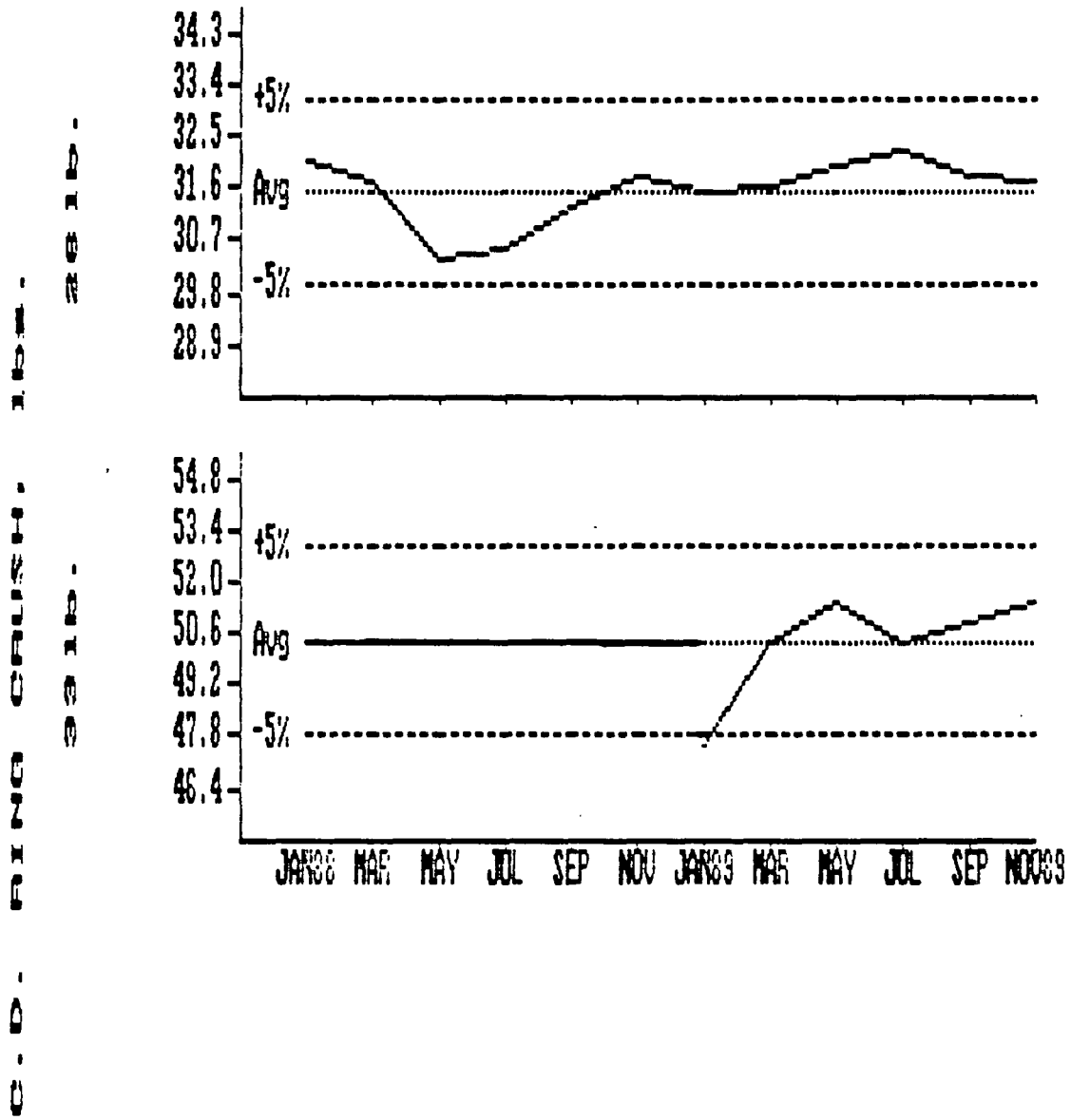
MEDIUM BI-MONTHLY AVERAGES

TWO YEAR TREND PLOT FOR CONCORDIA, lbs.



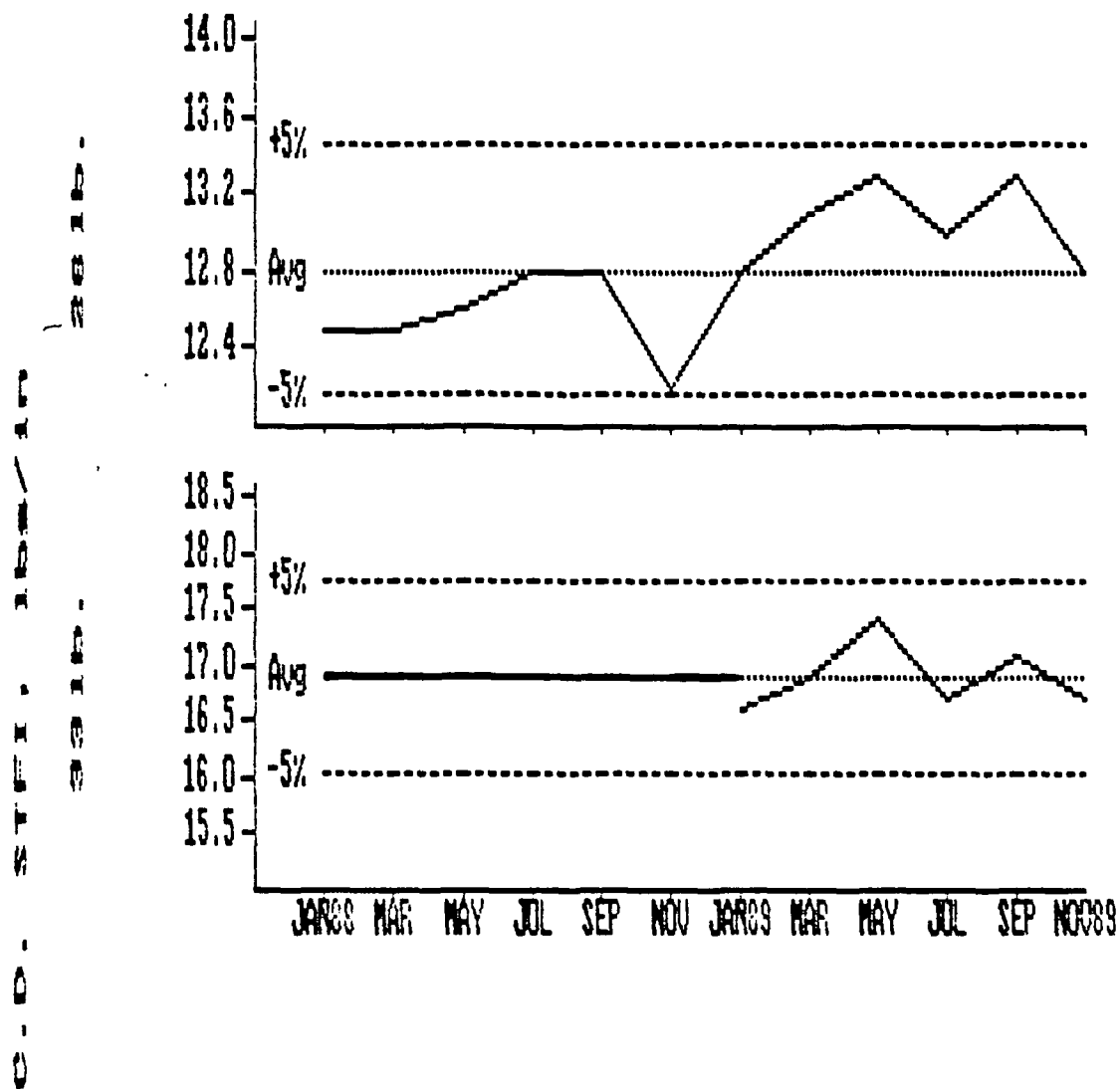
MEDIUM BI-MONTHLY AVERAGES

TWO YEAR TREND PLOT FOR C.D. RING CRUSH, lbs.



MEDIUM BI-MONTHLY AVERAGES

TWO YEAR TREND PLOT FOR C.D. STFI, lbs/in



MEDIUM BI-MONTHLY AVERAGES

INTRODUCTION

The continuous base-line study (modified) is a compilation of bimonthly averages of mill test data obtained routinely on 26-lb and 33-lb corrugating medium manufactured in the member mills of C.K.P.G. Mill data are included for moisture content, basis weight, caliper, Concora, C.D. ring crush, and C.D. STFI tests made on the production of individual machines which produced at least 500 tons of one of two major grade weights during a given period.

Participating mills are asked to report reel moisture content, basis weight, and moisture content corresponding to the basis weight measurement. The latter two measurements are used to compute the adjusted basis weight corresponding to a moisture content of 7.8%. Only the reel moisture content and the adjusted basis weight are included in the report.

PRESENTATION OF DATA

For the two major grade weights of corrugating medium referred to earlier, data on conditioning and testing environments, mill test averages for moisture content, adjusted basis weight, caliper, Concora, C.D. ring crush, and C.D. STFI results are compiled in the following tables:

Table Number	Description
I-III	Mill Test Averages on 26-lb Corrugating Medium
IV-VI	Mill Test Averages on 33-lb Corrugating Medium
VII	Data on Conditioning and Testing Environments

The procedure used to calculate adjusted basis weight, cumulative averages, and indexes are described in the Appendix.

It should be explained that the number of machines for which data are compiled in each table for a specified period varies for these reasons: A machine must have (a) produced at least 500 tons of 26- or 33-lb corrugating medium during the specified period, or (b) produced 500 tons of 26- or 33-lb corrugating medium during ANY ONE OR MORE of the 12 months prior to the specified period (so that a cumulative average is available), to be included in a given table.

Table 1

Averages of Mill Quality Data for JUL-AUG, 1989 - 26 LB Corrugating Medium

Code *C	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq Ft			Caliper Mil		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
F1	7.3	7.2	104.1	25.9	26.0	98.8			
H1(R)	6.4	7.0	91.3	26.4	26.2	100.5	8.8	8.4	93.8
M1	7.0	7.0	99.8	26.2	26.1	99.7	9.2	9.1	98.1
N1	6.1	6.0	87.0	26.4	26.6	100.5	9.3	9.5	99.2
R1(R)		5.9		26.6	26.7	101.3	8.6	8.5	91.7
S1	7.7	7.2	109.8	26.0	26.2	99.1			
T1(R)	5.9	5.6	84.1	26.6	26.7	101.5	9.1	9.2	97.0
W1(R)		6.0		26.2	26.2	99.7	9.2	9.1	98.1
Y1	9.4	8.8	134.0	25.9	26.0	98.8	8.7	8.8	92.8
C2(R)	7.0	7.1	99.8	26.0	26.0	99.1	10.7	10.7	114.1
F2(R)	6.4	6.4	91.3	27.1	26.8	103.2	9.0	9.0	96.0
I2(R)	5.6	5.3	79.8	26.7	26.7	101.8	9.1	9.3	97.0
M2	9.4	9.6	134.0	25.4	25.3	96.6	9.4	9.3	100.2
Q2	7.7	7.6	109.8	26.1	26.1	99.5	8.4	8.3	89.6
S2	7.5	7.3	106.9	26.8	26.3	102.0			
V2	7.3	7.2	104.1	26.1	26.1	99.6			
C3	7.4	7.5	105.5	26.7	26.4	101.7	11.5	10.9	122.6
D3(R)	5.8	5.8	82.7	26.8	26.6	101.9	10.5	10.6	112.0
H3	7.8	7.8	111.2	26.0	26.2	99.0	8.9	9.8	94.9
J3	7.0	6.9	99.8	26.1	26.1	99.3	8.5	8.5	90.6
K3	7.8	7.7	111.2	26.6	26.4	101.3	9.9	9.7	105.6
M3	7.8	7.8	111.2	26.0	26.2	99.0	8.8	9.4	93.8
V3	6.0	5.9	85.6	26.4	26.4	100.6	9.9	9.9	105.6
Y3(R)	6.8	6.8	97.0	26.0	26.0	98.9	9.5	9.5	101.3
B4	6.6	6.5	94.1	26.1	26.1	99.3	8.0	8.2	85.3
D4	9.1	9.1	129.8	25.4	25.4	96.9	9.0	9.2	96.0
K4(R)	7.6	7.7	108.4	26.1	26.0	99.2			
L4	7.0	6.9	99.8	26.0	26.0	99.1	9.8	9.7	104.5
N4	6.6	6.6	94.1	26.5	26.4	101.1			
Q4(R)	5.8	5.9	82.7	26.6	26.4	101.2	10.8	11.0	115.2
S4(R)		7.5			26.4			8.9	
V4	6.4	6.5	91.3	27.1	27.1	103.2			
X4		7.1		26.5	26.4	100.9	8.9	8.9	94.9
FKBG	7.1	7.0	101.4	26.3	26.3	100.1	9.3	9.4	99.6
(R)	6.4	6.4	99.4	26.5	26.4	100.2	9.5	9.5	100.1

Notes A, B, and C are given in the appendix.

Table I (Cont)

Averages of Mill Quality Data for JUL-AUG, 1989 - 26 LB Corrugating Medium

Code *C	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb/In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
F1	60.0	60.2	97.0	31.0	31.5	98.5			
H1(R)	65.4	65.6	105.8						
M1	61.2	58.7	99.0				14.2	14.6	110.6
N1	65.6	62.2	106.1					15.6	
R1(R)	62.3	62.5	100.8						
S1	60.0	59.7	97.0	27.5	27.1	87.4	11.6	12.9	90.4
T1(R)	59.8	59.6	96.7	22.1	25.0	70.2			
W1(R)	57.9	58.6	93.6	28.4	28.4	90.2			
Y1	62.0	62.5	100.3				11.9	12.0	92.7
C2(R)	37.8	64.3	61.1	30.0	32.6	95.3			
F2(R)	60.5	60.2	97.9	32.5	32.5	103.3	11.9		92.7
I2(R)	59.7	60.0	96.6	23.6	26.2	75.0			
M2	64.1	64.7	103.7	33.6	27.7	106.8			
Q2	61.0	59.8	98.7	36.0	38.4	114.4	14.2	13.9	110.6
S2	63.0	61.2	101.9	36.0	32.3	114.4			
V2	62.0	61.0	100.3	30.0	28.7	95.3			
C3	67.5	61.8	109.2	42.5	40.1	135.0			
D3(R)	60.6	60.4	98.0						
H3	57.0	57.7	92.2				13.4	12.5	104.4
J3	66.0	66.8	106.7				12.4	12.5	96.6
K3	63.5	63.3	102.7	36.5	34.6	116.0	12.0	12.0	93.5
M3	58.0	58.0	93.8				13.2	12.5	102.8
V3	60.0	60.3	97.0	32.0	31.1	101.7	13.4	11.0	104.4
Y3(R)	37.4	63.0	60.5	24.6	25.4	78.2			
B4	71.0	70.8	114.8				15.2	14.1	118.4
D4	59.4	59.1	96.1				13.2	12.8	102.8
K4(R)	35.0	58.2	56.6						
L4	69.0	67.7	111.6	40.0	41.0	127.1	13.0	11.7	101.3
N4	58.5	58.4	94.6	30.0	29.8	95.3	12.3	13.0	95.8
Q4(R)	60.6	60.3	98.0						
S4(R)		69.5							
V4	60.0	63.1	97.0	37.2	33.3	118.2	13.1	13.8	102.0
X4	60.0	59.8	97.0	39.0	31.8	123.9		12.9	
FKBG	59.6	61.8	96.3	32.2	31.5	102.4	13.0	12.8	101.3
(R)	54.3	62.0	87.5	26.9	28.4	94.7	11.9		

Notes B and C are given in the appendix.

Table II

Averages of Mill Quality Data for SEP-OCT, 1989 - 26 LB Corrugating Medium

Code *C	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq Ft			Caliper Mil		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
F1	7.6	7.3	108.1	26.1	26.0	99.2			
H1(R)	6.2	6.7	88.2	26.5	26.3	100.7	8.6	8.5	91.8
M1	7.0	7.0	99.6	26.2	26.1	99.7	9.0	9.1	96.0
N1	6.1	6.0	86.8	26.5	26.6	100.8	9.3	9.5	99.2
R1(R)		5.9		26.6	26.7	101.3	8.9	8.6	95.0
S1	7.9	7.3	112.4	26.0	26.1	98.9			
T1(R)	5.8	5.7	82.5	26.7	26.6	101.5	9.0	9.2	96.0
W1(R)		6.1		27.2	26.2	103.6	9.0	9.2	96.0
Y1	9.0	8.9	128.0	26.1	26.0	99.2	8.7	8.8	92.8
C2(R)	7.1	7.1	101.0	26.0	26.0	99.1	10.9	10.7	116.3
F2(R)	6.6	6.4	93.9	27.1	26.8	103.1	9.0	9.0	96.0
I2(R)	5.4	5.4	76.8	26.8	26.7	102.0	9.2	9.3	98.2
M2	9.4	9.5	133.7	25.5	25.3	96.9	9.4	9.3	100.3
Q2	7.7	7.6	109.5	26.1	26.1	99.5	8.6	8.3	91.8
S2	7.2	7.3	102.4	26.6	26.4	101.2			
V2	7.2	7.2	102.4	26.2	26.1	99.6			
C3	7.5	7.5	106.7	26.3	26.5	100.1	10.9	11.0	116.3
D3(R)	5.8	5.8	82.5	26.9	26.6	102.3	10.6	10.6	113.1
H3	7.8	7.8	110.9	26.0	26.1	99.0	9.0	9.6	96.0
J3	7.0	6.9	99.6	26.1	26.1	99.3	8.7	8.5	92.8
K3	8.0	7.7	113.8	26.4	26.4	100.7	10.2	9.8	108.8
M3	7.8	7.8	110.9	26.0	26.2	99.0	8.7	9.3	92.8
V3	6.0	5.9	85.3	26.5	26.4	100.9	10.0	9.8	106.7
Y3(R)	6.9	6.8	98.1	26.0	26.0	98.8	9.5	9.5	101.4
B4	6.7	6.5	95.3	26.1	26.1	99.3	8.0	8.2	85.3
D4	8.8	9.1	125.2	25.4	25.5	96.8	9.0	9.1	96.0
K4(R)	7.7	7.7	109.5	26.0	26.0	99.1			
L4	7.0	7.0	99.6	26.0	26.0	99.1	9.7	9.7	103.5
N4	6.6	6.6	93.9	26.5	26.4	101.1			
Q4(R)	5.8	5.9	82.5	26.8	26.4	101.9	11.5	11.0	122.7
S4(R)	7.6	7.6	108.1	26.4	26.4	100.5	8.8	8.9	93.9
V4	6.5	6.5	92.5	27.1	27.1	103.1			
X4		7.1		26.4	26.4	100.5	9.1	8.9	97.1
FKBG	7.1	7.0	101.3	26.3	26.3	100.2	9.4	9.4	99.8
(R)	6.5	6.4	101.3	26.6	26.4	100.6	9.5	9.5	100.2

Notes A, B, and C are given in the appendix.

Table II (Cont)

Averages of Mill Quality Data for SEP-OCT, 1989 - 26 LB Corrugating Medium

Code *C	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb/In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
F1	60.0	59.8	97.7	30.0	31.3	94.5			
H1(R)	65.3	65.6	106.3						
M1	61.2	58.2	99.6				14.6	14.5	113.4
N1	62.5	62.9	101.7					15.6	
R1(R)	61.4	62.5	100.0						
S1	60.5	59.8	98.5	30.5	27.7	96.1		12.7	
T1(R)	59.6	59.8	97.0	22.0	24.2	69.3			
W1(R)	57.3	58.4	93.3	27.3	28.3	86.0			
Y1	62.0	62.3	100.9				12.2	12.0	94.8
C2(R)	38.0	59.9	61.9	31.0	32.3	97.7			
F2(R)	61.0	60.3	99.3	31.0	32.9	97.7	16.6	11.9	128.9
I2(R)	59.6	60.0	97.0	22.8	25.5	71.8			
M2	64.2	64.6	104.5	29.7	28.6	93.6			
Q2	60.0	60.3	97.7	34.0	38.3	107.1	13.8	14.0	107.2
S2	61.0	61.5	99.3	34.0	33.2	107.1			
V2	62.0	61.0	100.9	29.0	29.2	91.4			
C3	66.4	62.9	108.1	45.4	41.0	143.0			
D3(R)	60.6	60.4	98.7						
H3	58.0	57.5	94.4				13.3	12.7	103.3
J3	67.0	66.7	109.1				12.5	12.3	97.1
K3	61.0	63.4	99.3	35.5	35.4	111.9	11.4	12.0	88.5
M3	58.0	58.0	94.4				13.1	12.7	101.7
V3	59.0	60.3	96.0	32.0	31.4	100.8	12.8	11.7	99.4
Y3(R)	37.5	58.7	61.0	24.0	25.4	75.6			
B4	74.0	70.3	120.5				13.5	14.0	104.8
D4	57.6	59.0	93.8				12.7	12.9	98.6
K4(R)	35.0	52.4	57.0						
L4	72.0	68.5	117.2	42.0	40.5	132.3	13.0	12.0	101.0
N4	59.0	58.5	96.0	30.5	30.4	96.1		12.9	
Q4(R)	60.3	60.4	98.2						
S4(R)	67.7	69.4	110.2						
V4	60.5	62.5	98.5	38.3	34.2	120.7	13.4	13.6	104.1
X4	59.0	60.0	96.0	36.0	33.2	113.4		12.9	
FKBG	59.6	61.4	97.1	31.8	31.7	100.3	13.3	12.9	103.3
(R)	55.3	60.7	91.1	26.4	28.1	93.9	16.6	11.9	139.5

Notes B and C are given in the appendix.

Table III

Averages of Mill Quality Data for NOV-DEC, 1989 - 26 LB Corrugating Medium

Code *C	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq Ft			Caliper Mil		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
F1	7.3	7.3	103.6	26.0	26.0	99.1			
H1(R)	6.2	6.4	88.0	26.1	26.4	99.5	8.6	8.5	91.9
M1	7.2	7.0	102.2	26.2	26.1	99.6	9.1	9.1	97.2
N1	6.1	6.0	86.6	26.3	26.5	100.0	9.5	9.4	101.5
R1(R)		5.9		26.6	26.7	101.2	9.1	8.6	97.2
S1	7.8	7.4	110.7	26.0	26.1	98.9			
T1(R)	5.7	5.7	80.9	26.6	26.6	101.2	9.1	9.1	97.2
W1(R)		6.2		26.3	26.4	100.2	9.0	9.2	96.2
Y1	8.9	8.9	126.3	26.0	26.0	98.9	8.6	8.8	91.9
C2(R)	8.0	7.1	113.5	26.1	26.0	99.4	10.7	10.7	114.3
F2(R)	6.5	6.4	92.2	26.8	26.9	101.9	9.1	9.0	97.2
I2(R)	5.6	5.4	79.5	26.7	26.7	101.7	9.2	9.2	98.3
M2	9.4	9.5	133.4	25.5	25.3	97.2	9.4	9.3	100.4
Q2	7.6	7.6	107.8	26.2	26.1	99.5	8.3	8.4	88.7
S2	7.1	7.3	100.8	26.3	26.4	100.1			
V2	7.3	7.2	103.6	26.1	26.1	99.5			
C3	7.5	7.5	106.4	21.0	26.5	79.8	11.0	11.0	117.5
D3(R)	5.8	5.8	82.3	26.8	26.7	101.9	10.6	10.7	113.3
H3	7.8	7.8	110.7	25.9	26.1	98.5	9.4	9.5	100.4
J3	7.1	6.9	100.8	26.1	26.1	99.3	8.6	8.6	91.9
K3	8.0	7.8	113.5	26.3	26.5	100.2	10.2	9.8	109.0
M3	7.8	7.8	110.7	25.9	26.1	98.5	9.1	9.2	97.2
V3	6.5	5.9	92.2	26.5	26.4	100.7	10.1	9.9	107.9
Y3(R)	7.0	6.8	99.3	26.0	26.0	99.0	9.5	9.5	101.5
B4	6.7	6.5	95.1	26.2	26.1	99.6	7.9	8.2	84.4
D4	9.2	9.0	130.6	25.4	25.5	96.7	9.1	9.1	97.2
K4(R)	7.6	7.7	107.8	26.1	26.0	99.1			
L4	6.9	7.0	97.9	20.8	26.0	79.0	9.6	9.7	102.6
N4	7.3	6.6	103.6	26.2	26.4	99.8			
Q4(R)	5.8	5.9	82.3	26.6	26.6	101.1	11.0	11.1	117.5
S4(R)	7.9	7.6	112.1	26.5	26.4	100.8	8.4	8.9	89.8
V4	6.3	6.5	89.4	27.0	27.1	102.9	9.3		99.4
X4		7.0		26.4	26.4	100.3	9.0	9.0	96.2
FKBG	7.2	7.0	102.1	25.9	26.3	98.6	9.4	9.4	99.9
(R)	6.6	6.4	102.9	26.4	26.4	99.9	9.5	9.5	99.6

Notes A, B, and C are given in the appendix.

Table III (Cont)

Averages of Mill Quality Data for NOV-DEC, 1989 - 26 LB Corrugating Medium

Code *C	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb/In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
F1	61.0	59.8	99.9	32.0	31.2	100.5			
H1(R)	65.8	65.6	107.7						
M1	62.4	58.4	102.2				14.2	14.5	109.6
N1	62.2	63.1	101.8					15.6	
R1(R)	62.2	62.2	101.8						
S1	61.5	60.0	100.7	30.0	28.3	94.3		12.7	
T1(R)	60.3	59.9	98.7	22.5	23.5	70.7			
W1(R)	58.2	58.2	95.3	27.5	28.1	86.4			
Y1	63.0	62.3	103.2				11.7	12.0	90.3
C2(R)	38.0	55.5	62.2	32.0	32.1	100.5			
F2(R)	62.0	60.6	101.5	29.6	32.3	93.0	11.2	14.3	86.5
I2(R)	60.7	59.9	99.4	24.2	24.9	76.0			
M2	64.2	64.5	105.1	29.6	28.8	93.0			
Q2	62.0	60.3	101.5	37.0	37.4	116.3	14.5	14.0	111.9
S2	60.0	61.5	98.2	32.0	33.3	100.5			
V2	62.0	61.3	101.5	29.0	29.3	91.1			
C3	64.0	63.8	104.8		42.0		11.2		86.5
D3(R)	61.2	60.4	100.2						
H3	57.0	57.5	93.3				12.9	12.8	99.6
J3	66.0	66.8	108.1				12.3	12.1	94.9
K3	64.0	63.3	104.8	35.5	36.0	111.5	11.3	11.9	87.2
M3	58.0	58.0	95.0				12.8	12.8	98.8
V3	60.0	60.1	98.2	32.0	31.6	100.5	13.9	12.3	107.3
Y3(R)	37.4	54.4	61.2	25.8	25.3	81.1			
B4	72.0	71.2	117.9				14.6	13.9	112.7
D4	57.6	58.7	94.3				12.5	12.9	96.5
K4(R)	35.1	48.9	57.5						
L4	71.0	69.0	116.3	41.0	40.5	128.8	13.0	12.3	100.4
N4	59.0	58.8	96.6	30.0	30.6	94.3		12.7	
Q4(R)	60.0	60.3	98.2						
S4(R)	72.3	68.8	118.4						
V4	61.3	61.8	100.4	41.0	35.3	128.8	13.6	13.5	105.0
X4	59.0	59.8	96.6	40.0	34.0	125.7		12.9	
FKBG	60.0	61.1	98.3	31.7	31.8	99.6	12.8	13.0	99.1
(R)	56.1	59.5	94.2	26.9	27.7	97.3	11.2	14.3	78.6

Notes B and C are given in the appendix.

Table IV

Averages of Mill Quality Data for JUL-AUG, 1989 - 33 LB Corrugating Medium

Code *C	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq Ft			Caliper Mil		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
M1	7.1	7.0	96.3	33.1	33.1	100.1	11.2	11.1	99.2
N1	6.3		85.5	33.3		100.7	11.6		102.8
R1(R)		5.9		33.0	33.1	99.8	11.1	10.8	98.3
S1	8.0	8.0	108.5	32.9	32.9	99.6			
T1(R)							9.0		79.7
Y1	9.1	8.8	123.5	32.4	32.8	98.1	10.4	10.8	92.1
C2(R)	7.1	7.5	96.3	32.9	32.7	99.5	11.0	10.6	97.4
F2(R)	6.7	6.5	90.9	33.1	33.1	100.1	10.2	10.6	90.4
I2(R)	5.9	5.7	80.0	33.9	33.9	102.5	11.5	11.5	101.9
M2	9.8	9.6	133.0	32.1	32.0	97.0	11.8	11.5	104.5
Q2	7.5	7.7	101.7	33.2	33.0	100.4	10.9	10.4	96.6
S2		6.8			33.6				
C3	8.4	8.2	114.0	32.8	32.8	99.2	14.0	13.1	124.0
J3	7.2	7.1	97.7	33.1	33.1	100.1	11.2	11.2	99.2
K3	7.8		105.8	33.5		101.3	11.9		105.4
M3	7.7	7.8	104.5	33.0	33.2	99.9	11.4	11.8	101.0
V3	5.8	5.8	78.7	33.7	33.6	102.0	12.3	12.2	109.0
Y3(R)	6.8	7.0	92.3	33.0	33.0	99.7	11.0	11.0	97.4
B4		6.4			33.1			10.6	
K4(R)	7.8	7.8	105.8	33.2	33.0	100.4			
L4	7.3	7.3	99.0	33.0	32.9	99.7	12.2	12.0	108.1
S4(R)		7.7			33.2			10.9	
V4	7.0	7.1	95.0	33.0	33.0	99.8			
X4		7.6		33.3	33.4	100.7	11.3	11.2	100.1
FKBG	7.4	7.4	100.5	33.1	33.1	100.0	11.3	11.3	100.4
(R)	6.9	7.0	98.4	33.2	33.2	100.1	10.6	10.9	97.6

Notes A, B, and C are given in the appendix.

Table IV (Cont)

Averages of Mill Quality Data for JUL-AUG, 1989 - 33 LB Corrugating Medium

Code *C	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb/In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
M1	73.2	67.2	98.3				18.2	19.0	107.8
N1							17.7		104.8
R1 (R)				53.5	56.0	107.4			
S1	73.5	71.3	98.7	39.0	42.3	78.3		16.2	
T1 (R)									
Y1	78.0	75.7	104.7				14.8	15.1	87.6
C2 (R)	46.2	77.9	62.0	49.0	49.5	98.3			
F2 (R)	76.5	77.0	102.7	51.5	55.7	103.3	16.3		96.5
I2 (R)	76.6	77.1	102.8	32.8	37.7	65.8			
M2	74.7	74.1	100.3	48.0	39.3	96.3			
Q2	83.0	79.3	111.4	55.0	55.8	110.4	18.7	18.5	110.7
S2		73.3			48.0				
C3	70.9	65.6	95.2	59.9	57.4	120.2			
J3	68.0	66.7	91.3				15.8	15.3	93.5
K3	72.0		96.6	56.5		113.4	14.9		88.2
M3	73.0	72.0	98.0				17.4	17.2	103.0
V3	76.0	74.5	102.0	49.0	47.7	98.3	17.0	17.3	100.6
Y3 (R)	45.1	75.6	60.5	40.3	41.4	80.9			
B4		70.0						17.8	
K4 (R)	40.6	68.8	54.5						
L4	77.0	77.3	103.4	61.0	61.0	122.4	17.0	16.0	100.6
S4 (R)		88.3							
V4	72.9	73.9	97.9	52.2	51.9	104.7	16.1	17.1	95.3
X4	83.0	81.3	111.4	58.0	58.0	116.4		16.9	
FKBG	70.0	74.5	94.0	50.4	49.8	101.1	16.7	16.9	99.0
(R)	57.0	77.4	73.6	45.4	46.8	97.0	16.3		

Notes B and C are given in the appendix.

Table V

Averages of Mill Quality Data for SEP-OCT, 1989 - 33 LB Corrugating Medium

Code *C	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq Ft			Caliper Mil		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
M1	7.2	7.0	97.6	33.1	33.1	100.1	11.2	11.1	99.1
N1	6.3	6.3	85.4	33.3	33.3	100.7	11.6	11.6	102.6
R1(R)		5.9			33.0			10.9	
S1	7.9	8.0	107.1	33.0	32.9	99.7			
T1(R)								9.0	
Y1	8.9	8.9	120.6	32.3	32.7	97.7	10.3	10.7	91.1
C2(R)	7.5	7.4	101.6	32.7	32.7	98.8	10.6	10.7	93.8
F2(R)	6.7	6.6	90.8	33.1	33.1	100.1	10.2	10.5	90.3
I2(R)	5.8	5.7	78.6	33.8	33.9	102.3	11.8	11.5	104.4
M2	9.7	9.6	131.5	32.3	32.0	97.7	11.8	11.6	104.4
Q2	7.7	7.6	104.3	33.2	33.0	100.5	10.6	10.5	93.8
S2		6.8			33.6				
C3	8.3	8.3	112.5	32.8	32.8	99.3	13.6	13.3	120.3
J3	7.1	7.2	96.2	33.1	33.1	100.1	11.1	11.2	98.2
K3	8.1	7.8	109.8	33.3	33.5	100.7	12.4	11.9	109.7
M3	7.8	7.8	105.7	33.0	33.1	99.8	11.4	11.7	100.9
V3	5.6	5.8	75.9	33.9	33.6	102.5	12.2	12.2	107.9
Y3(R)	6.8	6.9	92.2	33.0	33.0	99.7	11.0	11.0	97.3
B4	7.5	6.4	101.6		33.1			10.6	
K4(R)	8.0	7.8	108.4	33.0	33.1	99.9			
L4	7.3	7.3	98.9	33.0	32.9	99.7	12.4	12.1	109.7
S4(R)	7.6	7.7	103.0	33.2	33.2	100.4	10.9	10.9	96.4
V4	7.0	7.0	94.9	33.0	33.0	99.7			
X4		7.6		33.2	33.3	100.5	11.4	11.2	100.9
FKBG	7.4	7.4	100.8	33.1	33.1	100.0	11.4	11.3	101.2
(R)	7.1	6.9	101.7	33.1	33.2	99.9	10.9	10.8	100.7

Notes A, B, and C are given in the appendix.

Table V (Cont)

Averages of Mill Quality Data for SEP-OCT, 1989 - 33 LB Corrugating Medium

Code *C	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb/In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
M1	73.2	68.7	99.7				19.1	18.8	113.4
N1							18.4	17.7	109.2
R1(R)					54.8				
S1	72.0	71.9	98.0	45.5	41.5	91.0		16.2	
T1(R)									
Y1	76.0	76.3	103.5				15.0	15.0	89.0
C2(R)	46.7	70.0	63.6	50.0	49.4	100.0			
F2(R)	77.5	76.9	105.5	49.0	54.7	98.0	15.8	16.3	93.8
I2(R)	76.6	77.0	104.3	32.2	36.5	64.4			
M2	75.2	74.3	102.4	51.5	41.5	103.0			
Q2	84.0	80.3	114.4	54.0	55.6	108.0	18.6	18.6	110.4
S2		73.3			48.0				
C3	73.4	66.9	100.0	59.8	58.1	119.6			
J3	67.0	67.0	91.2				15.7	15.4	93.2
K3	69.5	72.0	94.6	59.5	56.5	119.0	15.4	14.9	91.4
M3	74.0	72.3	100.8				17.6	17.2	104.5
V3	74.0	74.9	100.8	51.0	48.0	102.0	18.5	17.2	109.8
Y3(R)	45.0	68.0	61.3	38.0	41.2	76.0			
B4		70.0						17.8	
K4(R)	41.1	61.8	56.0						
L4	78.0	77.3	106.2	63.0	61.0	126.0	17.0	16.3	100.9
S4(R)	87.8	88.3	119.6						
V4	71.8	73.7	97.8	53.6	52.0	107.2	16.7	16.8	99.1
X4	79.0	81.8	107.6	54.0	58.0	108.0		16.9	
FKBG	70.6	73.4	96.2	50.9	50.0	101.7	17.1	16.8	101.4
(R)	62.5	73.0	85.5	42.3	46.4	91.1	15.8	16.3	96.9

Notes B and C are given in the appendix.

Table VI

Averages of Mill Quality Data for NOV-DEC, 1989 - 33 LB Corrugating Medium

Code *C	Moisture Content Percent			Adj. Basis Wt. *A Lb/M Sq Ft			Caliper Mil		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
M1	7.2	7.0	97.4	33.2	33.1	100.4	11.4	11.2	100.6
N1	6.5	6.3	87.9	33.3	33.3	100.7	11.8	11.6	104.1
R1(R)		5.9			33.0			10.9	
S1	8.0	8.0	108.2	32.9	32.9	99.6			
T1(R)								9.0	
Y1	9.1	8.9	123.1	23.9	32.6	72.3	10.2	10.6	90.0
C2(R)	8.0	7.4	108.2	32.8	32.7	99.1	10.9	10.7	96.2
F2(R)	6.7	6.6	90.6	33.1	33.1	100.1	10.5	10.4	92.7
I2(R)	5.8	5.7	78.5	33.8	33.9	102.3	11.6	11.5	102.4
M2	9.7	9.6	131.2	32.3	32.1	97.7	11.8	11.6	104.1
Q2	7.7	7.6	104.2	33.2	33.1	100.5	10.4	10.5	91.8
S2		6.8			33.6				
C3	8.2	8.3	110.9	23.9	32.8	72.4	13.5	13.4	119.1
J3	7.2	7.1	97.4	33.1	33.1	100.1	11.1	11.2	98.0
K3	8.0	8.0	108.2	33.2	33.4	100.5	12.4	12.1	109.4
M3	7.8	7.8	105.5	33.0	33.1	99.8	11.5	11.6	101.5
V3	6.5	5.8	87.9	33.5	33.7	101.2	12.3	12.2	108.6
Y3(R)	7.0	6.9	94.7	33.1	33.0	100.1	11.0	11.0	97.1
B4		6.9			33.1			10.6	
K4(R)	8.0	7.8	108.2	32.9	33.1	99.6			
L4	7.4	7.3	100.1	32.9	33.0	99.6	12.0	12.1	105.9
S4(R)	8.1	7.7	109.6	33.2	33.2	100.4	10.1	10.9	89.1
V4	7.0	7.0	94.7	33.0	33.0	99.7	12.0		105.9
X4		7.6		33.2	33.3	100.4	11.3	11.3	99.7
FKBG	7.6	7.4	102.5	32.2	33.1	97.3	11.4	11.3	100.9
(R)	7.3	7.0	104.3	33.2	33.2	100.0	10.8	10.8	99.8

Notes A, B, and C are given in the appendix.

Table VI (Cont)

Averages of Mill Quality Data for NOV-DEC, 1989 - 33 LB Corrugating Medium

Code *C	Concora Lb.			CD Ring Crush Lb.			CD STFI Lb/In.		
	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B	Cur. Av.	Cum. Av.	Ind. *B
M1	73.2	69.6	100.5				18.1	18.9	107.1
N1							17.7	18.1	104.8
R1(R)					54.8				
S1	71.5	71.9	98.1	46.0	42.3	91.7		16.2	
T1(R)									
Y1	77.0	76.2	105.7				14.8	15.0	87.6
C2(R)	45.8	65.3	62.9	53.0	49.5	105.7			
F2(R)	78.0	77.0	107.0	50.9	53.5	101.5	16.0	16.0	94.7
I2(R)	76.6	76.9	105.1	34.6	35.6	69.0			
M2	75.2	74.5	103.2	42.8	43.5	85.3			
Q2	81.0	81.0	111.2	54.0	55.3	107.7	18.4	18.6	108.9
S2		73.3			48.0				
C3	75.4	68.2	103.5	60.5	58.4	120.6	14.1		83.5
J3	67.0	67.0	91.9				15.6	15.5	92.3
K3	75.5	70.8	103.6	59.5	58.0	118.6	15.4	15.1	91.2
M3	74.0	72.6	101.5				17.0	17.3	100.6
V3	76.0	74.7	104.3	50.0	48.6	99.7	19.1	17.5	113.1
Y3(R)	45.7	63.4	62.7	40.1	40.5	80.0			
B4		70.0						17.8	
K4(R)	41.7	57.6	57.2						
L4	79.0	77.4	108.4	60.0	61.4	119.6	17.0	16.4	100.6
S4(R)	90.2	88.2	123.8						
V4	68.8	73.3	94.4	58.9	52.3	117.4	16.8	16.8	99.5
X4	79.0	81.2	108.4	59.0	57.2	117.6		16.9	
FKBG	71.1	72.9	97.5	51.5	50.2	102.7	16.7	16.9	98.7
(R)	63.0	70.8	89.0	44.7	45.7	97.7	16.0	16.0	99.7

Notes B and C are given in the appendix.

TABLE VII
DATA ON CONDITIONING AND TESTING ENVIRONMENTS
JUL-AUG, SEP-OCT, NOV-DEC, 1989


Code	Conditioning Environment			Testing Environment		
	Are Quality Samples Conditioned Before Testing?	Procedure			Are Quality Samples Tested Under Controlled Conditions of Temperature and humidity?	
		Time	Temp., °F	RH, %		
F1	NO	--	--	--	NO	
H1	NO	--	--	--	NO	
M1	NO	--	--	--	YES: 0 ±0°F; 0 ±0 % RH	
N1	NO	--	--	--	YES: 72 ±2°F; 50 ±2 % RH	
R1	NO	--	--	--	YES: 73 ±2°F; 50 ±2 % RH	
S1	NO	--	--	--	NO	
T1	YES	0	0	0	YES: 70 ±1°F; 50 ±2 % RH	
W1	YES	0	0	0	YES: 75 ±2°F; 50 ±5 % RH	
Y1	NO	--	--	--	YES: 70 ±2°F; 50 ±10 % R	
C2	NO	--	--	--	YES: 70 ±2°F; 50 ±2 % RH	
F2	NO	--	--	--	NO	
I2	YES	0	0	0	YES: 70 ±1°F; 50 ±2 % RH	
M2	NO	--	--	--	YES: 72 ±2°F; 50 ±2 % RH	
Q2	NO	--	--	--	YES: 73 ±2°F; 50 ±2 % RH	
S2	NO	--	--	--	NO	
V2	NO	--	--	--	NO	
C3	NO	--	--	--	YES: 70 ±2°F; 50 ±2 % RH	
D3	NO	--	--	--	YES: 72 ±4°F; 50 ±5 % RH	
H3	NO	--	--	--	YES: 72 ±2°F; 50 ±2 % RH	
J3	NO	--	--	--	YES: 73 ±2°F; 50 ±2 % RH	
K3	NO	--	--	--	NO	
M3	NO	--	--	--	YES: 72 ±2°F; 50 ±2 % RH	
V3	YES	0	0	0	YES: 72 ±2°F; 50 ±5 % RH	
Y3	NO	--	--	--	YES: 72 ±2°F; 50 ±3 % RH	
B4	NO	--	--	--	YES: 73 ±2°F; 50 ±2 % RH	
D4	NO	--	--	--	YES: 72 ±3°F; 50 ±2 % RH	
K4	NO	--	--	--	YES: 72 ±2°F; 50 ±5 % RH	
L4	NO	--	--	--	YES: 73 ±2°F; 50 ±2 % RH	
N4	NO	--	--	--	NO	
Q4	NO	--	--	--	YES: 72 ±4°F; 50 ±5 % RH	
S4	NO	--	--	--	YES: 72 ±2°F; 50 ±2 % RH	
V4	NO	--	--	--	NO	
X4	NO	--	--	--	NO	

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APPENDIX

NOTES A, B, AND C USED IN TABULATIONS OF MILL DATA

Notes A, B, and C, used in the tables of mill data are given below; these notes define the procedure used in calculating adjusted basis weight, machine index, and C.K.P.G. index. It should be stressed that each formula is applicable only to a specific physical property of corrugating medium.

NOTE A: Adjusted basis weight (ABW) = reported basis weight (RBW) adjusted to moisture content of 7.8%:

$$ABW = RBW [(100 - \text{reported moisture content, \%}) / (100 - 7.8)]$$

NOTE B: Machine index (%) =

$$[(\text{current machine average} / \text{cumulative C.K.P.G. average}) * 100] \quad \text{Where}$$

$$\text{Cumulative C.K.P.G. average} =$$

$$[\sum \text{CFKBGA's for previous six periods, excluding current CFKBGA} / 6]$$

$$\text{C.K.P.G. index (\%)} =$$

$$[(\text{current C.K.P.G. average} / \text{cumulative F.K.B.G. average}) * 100] \quad \text{Where}$$

$$\text{Current C.K.P.G. average} =$$

$$[\sum \text{CMA's for current period for all machines} / \text{number of machines}]$$

NOTE C: (R) - Indicates a medium manufactured from recycled fibers.

CMA = current machine average for a specific physical property of 26- and 33-lb corrugating medium obtained during a given period on a specific machine.

CFKBGA = current F.K.B.G. average for a specific physical property of 26- and 33-lb corrugating medium obtained during a given period.

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